

THE
BIOLOGIST



Vol. XI, No. 2

December, 1929

THE BIOLOGIST

OFFICIAL PUBLICATION OF THE

PHI SIGMA SOCIETY

Volume XI Denver, Colorado, December, 1929

Number 2

TABLE OF CONTENTS

	Page
Directory of Active Chapters (Secretaries)	34-35
Chapter Reports	
Beta	37
Epsilon	38
Eta	40
Iota	41
Lambda	42
Mu	44
Xi	46
Rho	48
Tau	49
Upsilon	50
Phi	51
Chi	52
Psi	54
Omega	55
Alpha Alpha	56
Alpha Epsilon	58
Report of the National Treasurer	59
Key to the Cover Design	61-62

PHI SIGMA SOCIETY

An Organization Devoted to the Promotion of Interest in Research
in the Biological Sciences, Founded Ohio State
University, March 17, 1915.

COUNCIL

President

Dr. Paul B. Sears, (Alpha '16), Botany Department,
University of Oklahoma, Norman, Oklahoma

Vice-President

Dr. Anselm M. Keefe, (Zeta '24), St. Norbert College
West DePere, Wisconsin

Secretary and Editor

Dr. A. I. Ortenburger, (Beta '19), Zoology Department,
University of Oklahoma, Norman, Oklahoma

Treasurer

Erwine Hall Stewart, (Epsilon '17) Mesa, Colorado

DIRECTORY of the ACTIVE CHAPTERS

(Secretaries)

MICHIGAN

(Beta) Evelyn Dressel, Natural Science Building, University of
Michigan, Ann Arbor, Michigan.

MAINE

(Delta) Elizabeth Murphy, Balentine Hall, University of Maine,
Orono, Maine.

DENVER

(Epsilon) Ethel Glandon, Department of Anthropology, University of
Denver, Denver, Colorado.

WISCONSIN

(Zeta) S. L. Leonard, Department of Zoology, University of Wisconsin,
Madison, Wisconsin.

AKRON

(Eta) Dorothy Schneider, 90 Charlotte Street, Akron, Ohio.

MICHIGAN STATE

(Theta) W. F. Allen, Department of Chemistry, Michigan State College,
East Lansing, Michigan.

WASHINGTON UNIVERSITY

(Iota) Betty R. Monaghan, McMillan Hall, Washington University,
St. Louis, Missouri.

KANSAS

(Kappa) Louise Fulton, Department of Zoology, University of Kansas,
Lawrence, Kansas.

MONTANA

(*Lambda*) Paul Lemmon, Department of Biology, University of Montana, Missoula, Montana.

CALIFORNIA

(*Mu*) Esther Perry, 320 Hilgard Hall, University of California, Berkeley, California.

WASHINGTON AND JEFFERSON

(*Nu*) Marlin W. Helfrick, Phi Pi Phi House, Washington, Pennsylvania.

NEBRASKA

(*Xi*) Elizabeth Pinkerton, 2415 Garfield Avenue, Lincoln, Nebraska.

NORTH DAKOTA

(*Omicron*) L. S. Lewis, 204 Washington Street, Grand Forks, North Dakota.

EMORY

(*Pi*) W. B. Redmond, P. O. Box 534, Emory University, Georgia.

ILLINOIS

(*Rho*) Margaret L. Plant, 311 Women's Building, University of Illinois, Urbana, Illinois.

FLORIDA

(*Sigma*) John Tower, Department of Biology, University of Florida, Gainesville, Florida.

DUKE

(*Tau*) L. C. Chesley, Department of Zoology, Duke University, Durham, North Carolina.

MIAMI

(*Upsilon*) Charles Collins, Miami University, Oxford, Ohio.

NEW HAMPSHIRE

(*Phi*) Ruth Thompson, Department of Zoology, University of New Hampshire, Durham, New Hampshire.

MONTANA STATE

(*Chi*) Virginia Mills, Lewis Hall, Montana State College, Bozeman, Montana.

WASHINGTON

(*Psi*) Marjorie Wells, Department of Zoology, University of Washington, Seattle, Washington.

OKLAHOMA

(*Omega*) Helen N. Vincent, Department of Botany, University of Oklahoma, Norman, Oklahoma.

SOUTHERN CALIFORNIA

(*Alpha Alpha*) N. Ellen Denning, 1250 So. Los Robles Avenue, Pasadena, California.

MOUNT UNION

(*Alpha Beta*) Floyd O. Atchley, 547 East State Street, Alliance, Ohio.

SOUTH DAKOTA

(*Alpha Gamma*) Donald Miller, 25 N. University, Vermillion, South Dakota.

LAWRENCE

(*Alpha Delta*) Eva Mossholder, Botany Laboratory, Lawrence College, Appleton, Wisconsin.

PITTSBURGH

(*Alpha Epsilon*) Ruth Shaw, Department of Zoology, University of Pittsburgh, Pittsburgh, Pennsylvania.

THE BIOLOGIST

Volume XI

December, 1929

Number 2

CHAPTER REPORTS

BETA

University of Michigan

At the beginning of the current school year, a close check of the membership of Beta Chapter revealed a marked deficiency in numbers. The graduation toll of the past year was unusually heavy and many places were left unfilled. Every effort is being made to increase the personnel of the Chapter, in quality as well as in quantity. Further efforts are being made to increase and develop the interests of the members in the activities conducted by Phi Sigma. The numerous other scientific organizations, seminars, and research clubs interfere many times with the interests of Phi Sigma, and it is difficult for a graduate student to maintain his interest in all of these organizations. In many cases, however, the graduate student does not have the opportunity to become interested in all of these. In such cases, Phi Sigma offers an opportunity for the student to direct his interests along biological lines. Beta Chapter is having difficulty in creating an active interest among its members. It would like to hear from other chapters in regard to this question. Are other chapters having the same problem to face? If so, how are they meeting the situation?

Two meetings have been held previous to this writing. At the first meeting, it was our pleasure to listen to Prof. S. A. Graham of the Forestry School and the Department of Zoology. An informal presentation and discussion of "The Influence of Animals upon Plant Succession" proved to be intensely interesting. The second meeting was an open meeting and was very well attended. Dr. Carl O. Hubbs of the University Museum presented some interesting scenes and side-lights of his summer's expedition to Japan and the Malay Peninsula. Refreshments were served after the discussion.

Activities of Phi Sigma members during the summer were confined, for the most part, to attendance of Summer School Sessions at various institutions. The University Biological Station at Douglas Lake was attended by seven members of Beta Chapter. Six members remained

at Ann Arbor during the summer months. Donald Ameel attended the Second Session at Woods Hole, Massachusetts. E. P. Creaser, our worthy president, spent the month of September in Georgia, where he collected specimens for the University Museum. W. T. Dempster is now instructing in anatomy in the Medical School of the University of Michigan. M. C. Old covered the entire State of Michigan during the summer, collecting many specimens of fresh-water sponges.

It is the wish of the Beta Chapter to extend to other chapters of Phi Sigma its best wishes for a prosperous and enjoyable school year, a Merry Christmas and a Happy New Year.

PAUL L. RISLEY.

EPSILON

Univeristy of Denver

Our first meeting this fall was a joint meeting with the Biology Club of the University of Denver. We were addressed by Mr. J. M. F. Dubois, naturalist, explorer, world-traveler, and photographer from Belgium. He spoke on "Jungle Trails of South America, Java and Sumatra." He touched especially upon the wild animal life of those countries as it is met in the jungle. The meeting was presided over by our new President, Katherine Bartlett, Assistant in the Anthropology Department of the University of Denver. Eight new initiates were present, some of whom have already done quite extensive research along biological lines.

Six of our members attended the Pecos Conference on archeology, held at Dr. A. V. Kidder's Camp at Pecos, New Mexico, the third week in August, this summer. Charlotte Morell attended the Jemez Summer-field School of Archeology of the University of New Mexico.

Miss Frances Watkins was the winner of the Phi Sigma medal offered by Epsilon Chapter to any student of the University of Denver who presented the best paper on scientific research. She also received one of the twelve scholarships offered by the Laboratory of Anthropology of Santa Fe last summer. This gave her two months at Pecos for research work in archeology. She is now with the Research Department of the South West Museum of Los Angeles.

Dr. E. B. Renaud, Professor of Anthropology in the University of Denver, conducted a two months expedition for the Colorado Museum of Natural History. Mr. Paul Beaubien, one of our new initiates, was a member of the expedition. Reconnaissance trips and a general anthropological survey covered the vast region between the Purgatoire River

in Colorado to the Canadian River near Tucumcari in New Mexico and the Raton-Las Vegas road, and the Texas line. Intensive exploration was concentrated in the Dry Cimarron, having for the principal result the discovery of cultural and human remains of a primitive form of Basket Maker Culture in caves located near Kenton and Folsom, New Mexico. This extends greatly to the northeast the area of distribution of that prehistoric culture.

Dr. Thomas R. Garth, of the Education Department, reports research work in psychology thus: "We are getting an article ready for publication on the *Intelligence and Achievements of 2006 Negroes of Texas and Oklahoma*. We find the usual results found among Negro intelligence tests, that the Southern Negro has an I. Q. of about .75, but when we take into consideration the factors determining the intelligence score we find a multiple correlation of .81. This shows that education has a profound influence in determining the score of Negro intelligence."

Dr. Garth took part in a symposium on *Race Differences* at the Ninth International Congress of Psychologists. Research investigators and psychologists from the United States and from all over the world were present. Dr. Garth gave a report to this group of a study he is making on *Intelligence and Achievement of Mixed-Blood Indians*. It is found from his study that education has less influence in determining the intelligence score in the case of the mixed-blood Indians than in the case of the Negro or the full-blood Indians. It is also found that the degree of white blood is a factor of small significance in determining the score.

The graduate students in this same department are making a study of the Mexicans in Intelligence and Mental Fatigue, and the Japanese in Mental Fatigue, also a study of color blindness among Indians, Mexicans and Negroes, but are not yet ready to report results.

Professor Humphrey Owen of the Zoology Department reports of the work of the graduates of last June who majored in that department as follows:

Solomon S. Kauvar—Entered as a freshman at Rush Medical School, University of Chicago.

Warren R. Barnum—Entered as freshman at University of Texas Medical School, Galveston, Texas.

Martha M. Schroeder—Graduate Assistant, Department of Zoology, Northwestern University, Evanston, Ill.

Ruth Tureman—Graduate Assistant, Department of Zoology, University of Denver.

Alice E. Parker—Graduate Assistant, Department of Zoology, University of Denver.

Raymond T. Fortner—Representative of the Spencer Lens Co. in the Rocky Mountain region.

Alice E. Parker and Ruth Tureman are working on a special problem in "Comparative Histology of the Integument of Vertebrates and Invertebrates."

Professor Humphrey Owen attended the summer term at the University of Chicago, and Professor Ira E. Cutler taught during the first term of the Summer School at the University of Denver.

ETHEL V. GLANDON.

ETA

University of Akron

Phi Sigma, the oldest research society on the campus of Akron University, is now beginning another new year under the leadership of Elonet Hutz, our new President.

Eta Chapter has always maintained its leadership and prestige among the honoraries at the University of Akron by its usefulness to the School and its progressiveness. It aims to continue this policy.

The initial meeting of the year was held October 23 in the Biology Laboratory. Various important committees were appointed with Dorothy Schneider acting as Secretary. Merlin Hayes, graduate student assistant in the Biology Department, was appointed Editor of the *Axis*, the biological paper issued by Eta Chapter, and Harry Lieberman was named auditor and historian. The program for the ensuing year was mapped out by the group. Judging by the kind of spirit and enthusiasm which the new members have shown the prospects for another fruitful year are bright.

Each member is beginning his work on a new research problem and intends to contribute something very interesting.

Eta Chapter aims to coöperate with the general Biology and Bacteriology Departments by acting as a clearing house for research problems.

In the recent Bond Issue Campaign, conducted by the University, Phi Sigma prepared several bacteriological displays for the windows of a banking house as an advertisement for the Campaign. This Campaign is being conducted to raise funds for the building of a Greater University of Akron.

The banquet held in June was successful in every respect. Entertaining speeches were given by Professors Fox and Plowman. Professor Fox delivered a welcoming talk to the new initiates and Theodore Krutky, former President, gave a stirring farewell address.

Five new members were initiated—Ann Snyder, Margaret Graves-mill, Merlin Hayes, Harry Lieberman and Morris Berloff.

The *Azis* was issued especially for the banquet.

Professor Fox, head of the Bacteriology Department, has been recently engaged in an investigation on "Food Poisoning in Meats". The Bacteriology Department and the Municipal Health Department Laboratory are closely connected since Professor Fox is director of both.

Professor Slagg, of the Botany Department, is now working on his Ph.D. thesis at the University of Wisconsin.

Doctor Kraatz, assistant professor of biology, is working at intervals, on a quantitative survey of the plankton organisms, in the Portage Lakes, as collected by tow-net with an aim toward seasonal distribution.

ALUMNI NEWS:

Kermit Johnstone, who was taking a Pre-Medical Combination course at the University of Akron last year, has now begun his medical work and is pursuing his studies at the Cincinnati Medical School.

Arthur Dobkin and Donald Traul, the popular musician and athlete members of Eta Chapter, have matriculated at the Ohio State Medical School.

The "Three Musketeers"—Theodore Krutky, former President of Eta Chapter; Gerald Schwartz, former Secretary, and Eugene Wetzel are now enrolled at the Michigan, Cincinnati and Ohio State Medical Schools, respectively.

Miss Mary Harms is taking a course in nursing and dietetics at the Johns Hopkins School.

Charles Witzberger, former President of Eta Chapter and student assistant in the Biology Department, was elected president of the freshman class of the new Homeopathic College in New York City.

In closing this article, the members of Eta Chapter send their best wishes for a progressive and interesting year to the other chapters of Phi Sigma.

HARRY LIEBERMAN.

IOTA

Washington University

Since Iota Chapter is made up of three rather distinct groups, that is, of members of the Biology Department of Washington University, of the Washington University Medical School, and of the Missouri Botanical Gardens,—groups rather widely separated in location if not in interests—it has been the purpose of the speakers to choose subjects of general enough interest to appeal to all of the departments represented. The first speaker of the year, Dr. Francis O. Schmitt, who has recently returned from Germany where he spent a year working under O. War-

burg on the respiration problem, talked on "Research Facilities in Germany." He mentioned especially the new Kaiser Wilhelm Building just erected near Berlin, for the exclusive use of foreign students. He also described the social life as well as the working day of research workers in Germany. Doctor Schmitt is returning to Washington University in connection with the establishment of a Department of General Physiology within the college, as distinct from the courses in animal and human physiology offered at the Medical School.

The recipients of the Phi Sigma scholarships for summer study, Lyle V. Beck and Harry Fuller, reported profitable summers. Mr. Beck spent the summer at the Puget Sound Biological Station at Friday Harbor, Washington; Mr. Fuller was at the University of Wisconsin. Several other members of the Chapter studied or did research work at one of the marine biological stations. Two members of the Botany Department, Dr. Mildred Matthias and Miss Catherine Lieneman, spent an especially enjoyable and profitable three months touring the western states in search of botanical specimens not available in the vicinity of St. Louis.

BETTY R. MONAGHAN.

LAMBDA

University of Montana

Since the last report of Lambda Chapter to the BIOLOGIST, we have initiated nine new members.

At a meeting April 4, 1929, new officers for the year were elected as follows: President, Faye Couey; Vice-President, Ruth Nickey; Secretary, Paul Lemmon; and Treasurer, Elizabeth Barto.

Among the outstanding events of the year was a trip up the scenic Bitterroot Valley to the government laboratory at Hamilton. Doctor Parker who is in charge of the station there, is conducting extensive research work on spotted fever and under his guidance the group, which numbered some thirty members, was given a chance to observe the work being done at the station. Doctor Parker also gave a very enlightening description of the methods used.

In the spring the Chapter took a week-end trip to the University Biological Station on Flathead Lake. For the past two years, Doctor Young, the late Doctor Kirkwood, and Doctor Waters, all faculty members of Phi Sigma, have been conducting research work on the plant and animal life of the lake. This work is carried on under the auspices of the Montana Fish and Game Commission.

A very novel banquet of the year was one given in the Botanical laboratory using only laboratory equipment for "silverware and china." This was a truly scientific dinner and appreciated and enjoyed by all members present.

Lambda Chapter was represented at the National Convention by Miss Anne Kimball. The group heard a very interesting account of the Convention and of the trip upon Miss Kimball's return.

A number of our members are working on research problems this year.

Arnold Wedum is working toward his M.A. degree on a problem, "Toxin and Glucoside Hemolysis of the Poisonous Mushroom, *Amontia phallardes*".

Carl Beall has partially fulfilled the requirements for his M.S. degree in forestry. His problem consists of growing plants under continual and intermittent artificial illumination to determine the difference in growth rates. Mr. Beall is working in connection with the State University Nursery.

Barry Park (For.) is working on a problem pertaining to seed germination of range plants.

Elizabeth Barto is counting the specimens of plant and animal life taken from Flathead Lake this summer.

We are fortunate this year in having with us Doctor Wahlin, assistant professor of biology. Doctor Wahlin is from Kappa Chapter, University of Kansas, and is in charge of the Bacteriology Department here.

ALUMNI NEWS:

Helen Griffin left about the middle of August for Fou Chou, China, where she will reside for the next three years as head of the Biology Department in the American Missionary College there.

Mary Brown has completed the work for her M.A. and is now taking the place of Miss Esther Larson on the teaching staff. Miss Larson has been in the hospital all summer and is unable to take up her work here.

Charles Dobrovolny is laboratory technician at the Kansas Agricultural College, Manhattan, Kansas.

Merve Harbaugh is an instructor at this same institution.

Anne Kimball is laboratory technician at the Mayo Brothers Hospital, Rochester, Minn.

Josephine Darlington has a fellowship at the Missouri Botanical Gardens, St. Louis, Missouri.

Josephine Henrickson has a fellowship at Northwestern University, Evanston, Illinois.

Albert Yochelson is working in the Forest Service office at Coeur d'Alene, Idaho.

Charles Rouse is an assistant at the Great Basin Experiment Station, Ephraim, Utah.

PAUL LEMMON.

MU

University of California

At the first meeting of the semester, another successful dinner, Dr. W. A. Setchell of the Botany Department told us something of the many fascinating problems of biological interest and importance in the Pacific. The questions of the formation of islands through the agencies of volcanic eruption and also of coral reefs, with the problems of their subsequent endowment of living forms—both plants and animals—the manner of dispersal of such organisms and the rate of faunation were ably and entertainingly presented.

Following the custom of enlivening business meetings with an informal talk and discussion by one of our active student members, Gordon Castle of the Department of Zoology and one of the biologists actively engaged in the work of the Termite Investigations Committee informed us of the problems involved in the study and control of this interesting but annoying pest. They prey insidiously on woods of all sorts, frequently attacking the foundations of houses, furniture, telephone poles, railroad ties, and even trees in which a decayed portion may give the insects a base from which they can eat their way into the sounder parts of the tree.

Due to the large number of departments represented in this chapter, it would be impossible to give in any one report the work of all the members; so for this time we are forwarding something regarding a few of our fellow workers. Next time we shall have news of members in other departments.

MUSEUM OF VERTEBRATE ZOOLOGY.

At the Museum of Vertebrate Zoology, Dr. E. Raymond Hall, a member from Kappa Chapter, is revising the weasel genus for both North and South America.

W. H. Burt, also from Kappa Chapter, is studying the morphology of the western woodpeckers.

Dr. Jean M. Linsdale, another Kansan, is investigating the magpies and their behavior.

Seth Benson, one of our own Californians, is looking into the life histories of the pocket mouse group, genus *Perognathus*.

We have just had word of the honor recently accorded to one of our most distinguished members. Dr. Joseph Grinnell, ornithologist and mammalogist, has been elected to the presidency of the American Ornithological Union.

Edna M. Fisher is completing her work on some problems pertaining to the sea otter.

BOTANY DEPARTMENT.

Dr. W. A. Setchell, chairman of the department, is working on a number of problems connected with the morphology, taxonomy, and phenology of aquatic plants with special reference to the 5° C. interval of temperature control over plant distribution and the coöperation between nullipores and corals in building up coral reefs of the Darwin-Dana type. His most immediate problem is an attempt to demonstrate by a careful study of the land plants of the Tonga Islands the impossibility of land bridge influence on the origin of the flora of those islands. At the Fourth Pacific Science Congress at Java, Dr. Setchell presented a paper on the "Nullipore Reef Control and Its Significance". Recent publications include "Morphological and Phenological Notes on *Zostera marina* L." and "The genus *Microdictyon*" (Univ. Calif. Publ. Botany, 14. nos. 19 and 20).

Dr. T. H. Goodspeed is collecting material on the genus *Nicotiana* with special reference to the taxonomic, cyto-genetic and distributional aspects including the effects of X-rays on alterations in genetic and chromosomal mechanisms.

Dr. R. L. Holman is investigating solarization of leaves. This term has been carried over from photography and applied to the photo-synthetic processes to describe the phenomena of the effect of light intensities on starch production. He finds that starch, produced under certain intensities for a short time, disappears when the illumination is continued for a longer time. The factors causing this behavior are now being sought.

Miss Lucile Roush is studying the *Melobesicæ* of the Pacific coast.

Mr. H. L. Mason is working on the Pleistocene Paleo-botany of the Pacific coast. A publication, "Fossil Records of some West American Conifers," appeared in the Carnegie Institute Publications, no. 346. The fossil flora of the Yellowstone National Park is under consideration at present.

Mrs. Irma Webber, who obtained her doctor's degree last May offering as her thesis, "Pleistocene Woods of the Pacific Coast", is now working on the comparative histology of the different species of *Ribes* in connection with the U. S. Government's efforts to control the white blister rust.

Milton Webber has almost completed his studies on the cytology of triplex *Nicotiana tabaeum sylvestris* hybrid and its progeny.

Helen-Mar Wheeler is making a cyto-genetic analysis of some forms of *Nicotiana suaveolens*.

Priscilla Avery is studying the cytology of irradiated plants and the chromosome behavior and morphology of *Nicotiana elata*; a recent publication deals with "The Nature and Effects of Chromosomal Irregularities in *Nicotiana elata*, var. *grandiflora*". (Univ. Calif. Publ. in Botany, 11, no. 15.)

John McKay, our President, counts the chromosome number of species of *Cucurbitaceæ* with a view to working out the degree of relationship existing between the various species of the family.

Mrs. Hazel H. McKay is determining the life histories of several members of the *Melanophyceæ* by growing them in culture, and studying their cytology in connection with development and reproduction.

Dorothea G. Doubt is investigating the life histories of the red alga, *Gymnogongrus*, and its relationship to the supposed parasite, *Actinococcus*.

David Goddard is considering the Dermatophyta.

John T. Howell has just published "Systematic study of the genus *Lesingia*" (Univ. Calif. Publ. in Botany, 16). This is a revision of a small group of related species of the *Compositae* based on studies in the field, garden and herbarium. The genus has its most extensive development in California although two varieties are found elsewhere—one in Arizona and the other in Lower California. He is now engaged in a monographic study of the genus *Phacelia*.

MUSEUM OF PALEONTOLOGY.

In the Museum of Paleontology, Doctor Matthew and R. A. Stirton are engaged in working the Pliocene Mammals of Texas. A paper on the "Osteology and Affinities of *Borophagus* a Hyenoid Dog" has recently been submitted and another on the "Three-Toed Horse of the Pliocene of Texas" is in progress. Doctor Matthew is also engaged in working up the phylogeny of dogs, with miscellaneous data, the importance of which has not been appreciated.

Dr. C. Camp is engaged in working on the fossil reptiles of the southwest and a study on the "Phytosaurs with Special Reference to Those of the Southwest" is now in press.

Dr. R. W. Chaney is engaged in a study of Pleistocene Floras of California in collaboration with Mr. H. L. Mason of the University of California, and a study of the Eocene Floras of Oregon with Doctor Sanborn of the University of Oregon.

Aside from these, Doctor Chaney is working on Oligocene Floras of Oregon, and while in a slightly different field he is writing the history of the Sequoias in the Sequoia National Park, in connection with the National Parks Board.

Miss Nellie M. Tegland is making known the fauna of the Type Blakeley, Upper Oligocene of Washington, and she is engaged in a study of the Genus *Galeodea* in the Oligocene of the West Coast. A few months ago she published a paper on "Correlation and Affinities of Certain Species of *Pitaria*."

Mr. T. J. Etherington is just completing his doctor's thesis which deals with the "Stratigraphy and Fauna of the Clallam or Middle Miocene Formation in the Chehalis River Valley of Washington."

MARY F. SANFORD.

XI

University of Nebraska

At their annual spring banquet Xi Chapter took in the following new members: Raymond Cunningham, Ben Dittus, Ralph Elliott, Helen Francis, Nelson Jodon, Everett Kreizinger, Mary Langevin, Robert Nelson and Elva Norris.

Among the programs of the past semester was one rather novel feature—a bird hike. At 6 A. M. on a fine May morning the group journeyed to a woods some twenty miles distant from Lincoln. Under the

leadership of George Hudson they were introduced to some of the charming singers that haunt the Nebraska woods and prairies. After a delicious out-of-door breakfast, the group broke up into small parties—some hunting for flowering plants, others for fungi, birds, etc.

At the initial fall meeting the topic for discussion was vacations. Walter Kiener told of his work as forest ranger on Twin Sisters Mountain in Colorado. He showed some hand-painted slides emphasizing the geology of the region and the native plants. Another member, George Hudson, acquainted us with the duties of a forest naturalist in Yellowstone National Park; and incidentally told a woeful bear story.

Feeling that the city-campus students were more or less ignorant of the activities at the agricultural college, the "ag" students escorted the club and interested guests through the Plant and Animal Pathology Departments. Professor L. Van Es, chairman of the Animal Pathology Department, conducted us through a fine special research laboratory, and explained the investigations now being carried on with chickens. The party ended up at the greenhouse where extensive research is being done on rusts and the alfalfa wilt. There are excellent means of light and temperature control in the greenhouse.

Xi Chapter will meet every other week. On alternate meetings there will be a speaker on some subject of general interest, while the intervening meetings will feature talks by the members of the society on research problems or other subjects of interest to them.

The officers for the ensuing year are: President, James Jensen; Vice-President, Joseph Reeves; Secretary, Elizabeth Pinkerton; Treasurer, Robert Nelson.

SOME SUMMER ACTIVITIES:

Helen Francis collected lily anthers and sectioned them for mitotic figures in Dr. Powers' Laboratory in Lincoln.

Charles Olmsted went collecting, and vacationing, in diversified regions—the Rocky Mountains, Mesa Verde National Park and the deserts of Arizona. He is taking up graduate work at the University of Oklahoma this fall.

Linton Gardner resumed activities at the Alpine Laboratory at Manitou, Colorado. He did transplant work and some research work on hydrophytes.

R. H. Nelson was engaged in doing coddling-moth research work for the Department of Entomology.

George Herzog worked on the farm, near Chambers, Nebraska; and did some collecting in spare moments.

Freida Roerden made quadrats of swamp vegetation. Collecting was her side-line along with measuring transpirations and light readings and evaporations.

Walter Kiener served in the capacity of a U. S. Park Ranger on Twin Sisters Mountain in Rocky Mountain National Park. His collection of 420

species of plants from that mountain formed a center of interest and attraction to visitors. His main occupation was watching for forest fires.

Anton Frolik studied wild hay ecology in the upper Elkhorn Valley and collected material for his thesis—"The Invasion of Tame Grasses into Native Prairie".

Orlando Bare finished his master's work this summer in entomology and is now engaged in some systematic work in that field.

Joseph Culbertson worked at the Experimental Agronomy Department and collected data for his thesis—"A Statistical Study of the Effect of Seed Treatment on *Diplodia zeae*".

Ben Dittus, Harold Foster and Floyd Schroeder worked on barberry eradication. Ralph Elliott also scouted for the barberry.

Everett Kreitzenger had his headquarters at Logan, Indiana, where he pursued the corn-borer.

Karl Koch completed his master's work this summer and worked on testing the effects of various sprays used in the control of apple scab and cherry leaf spot. He is doing graduate work at the University of Wisconsin this fall.

Julia Joyce Harper was a councilor in the nutrition camp—Kinnikinnick near Valparaiso, Nebraska.

Dorothy Schwartz acted as nature study teacher at the Camp Fire Girls' camp—Kiwanis—near Milford. She has joined the biology staff at Doane College this fall.

Harry Hart and George Hart were nature guides at Yellowstone National Park.

J. H. Jensen continued his research work on alfalfa wilt—working especially in the Platte Valley.

Nelson Jodon filled the position of assistant agronomist at the North Platte Experiment station, where he is still located.

Theodora Klose and Helen Buttery were engaged in sectioning and slide making at Bessey Hall.

ELIZABETH PINKERTON.

RHO

University of Illinois

Since the last report of Rho Chapter the members have enjoyed some very interesting meetings. We especially enjoyed a talk by Dr. W. R. Hayes of the Entomology Department on the subject of "Insects of Wheat and Flour"; the illustrated lecture on "Prevegetation of a Lava Flow in the Cascade Mountains of Washington"; and the discussion by Dr. Rossleene A. Hetler, acting head of the Home Economics Department, on "Vitamin Content of Cereals". Our President, who was our delegate to the National Convention, brought back to us an interesting report of the meetings.

In March our membership was increased by twenty-two initiates: in agriculture—D. D. Shaw, C. D. Palmer, R. L. McMunn, C. E. Baker, H. E. Myers, C. A. Van Doren; in bacteriology—P. C. Beier, Viola Michael; in botany—Frances Duffy; in home economics—Dorothy Hussemann, Lillie Johnson, Margaret Plant; in zoology—W. F. Hoheisel, D. I. Rasmussen, M. D. Bryant, R. C. Beaver, Ione Tobie, Eleanor Hancher, Hilda Stein, Harriet Rutherford, Elizabeth Gulick; in physiology—D. J. Verda. Our chapter membership at the present time includes thirty-five active and eleven faculty members.

The officers for Rho Chapter for the year 1929-1930 are: F. M. Clark, President; S. W. Decker, Vice-President; A. D. Moinat, Treasurer; and Margaret Plant, Secretary.

The organization finished its activities for the year 1928-1929 with a picnic held at Crystal Lake Park. An interesting program has been planned for the present year, and one meeting, the annual fall picnic, was held in October.

ALUMNI NEWS:

Dr. Elmer Roberts, associate professor of animal breeding, is on leave of absence and is spending the year in China, where he is continuing his research on inheritance of resistance to disease.

Dr. W. V. Balduf, assistant professor of entomology, is on leave of absence and is at present in Washington, D. C., where he is studying the use of minute parasitic wasps in the control of destructive insects. Later he expects to go to Hawaii.

H. E. Myers is in the Department of Agronomy at Kansas State Agricultural College, Manhattan, Kansas.

Eleanore Hancher has a position in the Biology Department of Parsons College, Fairfield, Iowa.

H. J. Bennett is in the Zoology Department of Louisiana State University at Baton Rouge.

Ione Tobie is now located at Alabama College, Montevallo, Alabama, where she is on the staff of the Biology Department.

P. C. Beaver is in the Zoology Department of the University of Wyoming at Laramie.

MARGARET L. PLANT.

TAU

Duke University

Tau greets her sister chapters with best wishes for a successful year.

Dr. Pearse is visiting professor of zoology at Keiogijuku University, Japan; during his absence this year, we have visiting Professors G. T. Hargitt of Syracuse, and C. M. Child of Chicago.

Graduate work in zoology was offered during the summer terms, Drs. B. Cunningham and D. L. Hopkins bearing the brunt of the teaching and supervision of research. Among "Phi Sigmities" who worked over-time we find:

D. M. Pace assisted in the course in general biology.

D. A. Fennell continued his investigation into the effects of bacteria on *Amoeba* cultures.

Miss D. Shallert still figured on the why and wherefore of infra-red sterility in rats.

A. R. Gomez completed requirements for his M.A.

In all there were about twenty students doing graduate work in zoology.

During the last few weeks of the summer, Doctor Hopkins forsook the summer school to go to the Tortugas, where he worked on marine *Amoebae*.

Professor F. A. Wolf continued his research on fungi of tobacco.

Professor T. E. Powell of Elon College worked on tobacco-chewing beetles. He was in the employ of Liggett and Myers.

Professor F. G. Hall continued his work on respiration of fishes at Woods Hole. He was accompanied by two of his students; R. W. Root, who worked on the carbohydrate distribution in the ontogeny of fish, and figured out what makes them "go"; and L. C. Chesley, who worked on enzymes and histology of some fish.

W. H. Bell spent the summer at the University of Chicago, taking advanced work in botany.

Miss Zoe W. Carroll investigated the protozoa of certain mineral springs in the wilds of Tennessee.

Dr. Hargitt addressed a group of about seventy people on the topic, "Ants, Bees and Men," given under the auspices of Phi Sigma.

LEON C. CHESLEY.

UPSILON

Miami University

(Received April 23, 1929)

The annual trip sponsored by Phi Sigma was taken during the month of May. The region selected to visit was Fort Ancient. This area is about forty miles distant from Miami University and is noted for its Indian mounds and relics in particular but also it affords opportunities for biological collection. It is customary to use the entire day for this excursion allowing each member of the party to pursue his own particular line of research.

The following was the program for Upsilon Chapter for the second semester of the college year (1928-1929):

Feb. 21—Creeping Movements in Animals—Dr. S. R. Williams.

Mar. 7—Economic Relations of the Insects to Man—Marion W. Boesel.

Mar. 21—Field Work in Kentucky—Paul H. Dunn.

Apr. 11—The Mode and Condition of the Formation of the Epiphragm of the Snail—Walter C. McNelly.

Apr. 18—Some Phases of Evolution—Dr. Wm. H. Shideler.

May 2—The End of Scientific Investigation—Hubert Connaroe.

May 16—The Races of People in the African Continent—Dr. Daniel daCruz.

May 23—Student Research Problems.

The officers for the coming year (1929-1930) are as follows:

President	B. Bernarr Vance
Vice-President	Mabel Wright
Secretary	Charles Collins
Treasurer	Florence Potter
Chapter Editor	Gerald Cheadle

HELEN DEETER.

PHI

University of New Hampshire

Last year, under the leadership of the President, Theodore Karabelas, was a pleasant and profitable one for Phi Chapter of Phi Sigma. Many of the meetings were held in the various fraternity houses on the campus, which gave an informal atmosphere of discussion and friendly interest that it is difficult to get in the more formal class-room buildings. Business meetings were held in the administrative building.

Some of the social events of last year included a Christmas party at Professor Jackson's, with appropriate presents for everyone; a Valentine party; a Pledging party at Professor Woodward's; and the spring mountain trip on Memorial Day. Besides there were many other pleasant social events and interesting and enjoyable meetings.

In March, Phi Chapter held its annual "Premedical Night" at which time all students interested in the study of medicine were invited to be the guests of the Chapter. The speaker of the evening, Dr. Hunter of Dover, gave a talk on experiences as a medical student and as a practitioner.

Papers given in the meetings last year included such varied topics as the following: "Sponges," "The Need for Young Scientific Workers," "The College Woods," "Vegetation of the Isles of Shoals," "History of some Phi Sigma Members," "Effect of Prenatal Feeding of

Caffein to Albino Rats," "Period of Flower Bud Differentiation in Baldwin and McIntosh Apples," "Birds of the Isles of Shoals," and many others.

The officers elected during the spring term are: President, Harry Tounge; Vice-President, Eleanor Sheehan; Recording Secretary, Miriam Nealley; Corresponding Secretary, Ruth Thompson; Treasurer, Kenneth Butterfield; Door-keeper, Philip Allan; Marshal, Joseph Bourque.

During the summer many of the members attended the Marine Zoological Laboratory of the University at the Isles of Shoals. All were very enthusiastic about the work which is being carried on there, and over the opportunity for work of a biological nature. A special Phi Sigma week-end gave other members a chance to visit the Laboratory and see the work that is being done there.

Stirring events in the ranks of Phi Sigma occurred near the close of the vacation.

On August 24, Miss Edythe May Tingley was married to Mr. Raymond B. Richardson. Both were members in the same class, of the local biological fraternity Pi Gamma, and were charter members of Phi Chapter of Phi Sigma.

On September 6, Miss Dorothy Tuck Smith and Mr. Donald Gilfillan Barton were married. Both Mr. and Mrs. Barton were charter members of Phi Sigma, and both were former presidents of the Chapter.

We have already held several meetings this fall. Besides general business meetings, ten new members were elected and initiated. Printed programs of Chapter activities will soon be out.

The mountain trip this fall was very successful. A party of twenty-six camped Saturday night at White's Pond, and climbed Mt. Kearsage the next day. Pledging took place on the mountain.

RUTH E. THOMPSON.

CHI

Montana State College

The last meeting for Chi Chapter last spring was the annual Phi Sigma picnic and field trip. Our officers elected for 1929-1930 are: Fred Morton, President; James Copeland, Vice-President; Joe De Laney, Treasurer; Virginia Mills, Secretary.

The first meeting of this year was held October eleventh, when we made our plan for initiation of several new members. The program for this year will consist of talks and papers presented by faculty members

in various departments who have had unusual as well as profitable experiences.

Professor R. A. Cooley, head of the Department of Entomology returned last spring from Africa where he had been leading an expedition for the Montana Board of Entomology. He was sent there for the purpose of studying parasites which destroy ticks and particularly to find new parasites.

Professor F. B. Cotner, associate professor of botany and bacteriology, spent last year at the University of Michigan where he completed the work for his Ph.D. degree.

ALUMNI NOTES:

George Cummins (Chi, '26) is pursuing graduate work in plant pathology at the University of Michigan.

Heber Donohoe (Chi, '26) accepted a fellowship at the University of Minnesota in the Department of Entomology and is studying for his Ph.D. degree.

David Fox (Chi, '26) is connected with the State Bureau of Entomology in Utah.

James Bradbury (Chi, '26) is a graduate student in the School of Medicine at the University of Michigan.

Sara Kendall (Chi, '26) is Laboratory Technician in Toledo, Ohio.

Ruth Swingle (Chi, '25) is now City Bacteriologist in Santa Barbara, California.

Edith Swingle (Chi, '27) entered the School of Medicine at the University of Chicago this fall.

Ross Hutchins (Chi, '29) is pursuing graduate work at A. and M. College in Mississippi in the Department of Entomology.

Glenn Kohls and William Jellison (Chi, '29) are working in the State Laboratory in Hamilton, Montana.

Frank Hinman (Chi, '29) is studying for an advanced degree in the Department of Entomology at Washington State College.

Frida Hendrickson (Chi, '29) accepted a fellowship in the Department of Botany and Bacteriology at the University of Washington.

Genevieve Gamble (Chi, '29) returned to Montana State College this fall and is doing Graduate Work in the Department of Botany and Bacteriology.

CHAPTER NOTES ARE AS FOLLOWS:

Fred Morton, President of Chi Chapter, spent last year in the state laboratory at Hamilton, Montana.

James Copeland, Vice-President, did summer work in the Barberry Eradication Campaign.

F. B. Cotner, associate professor of botany and bacteriology at Montana State College, is a member of Beta Chapter of Phi Sigma and a member of the Michigan Chapter of Sigma Xi. Mr. Cotner completed Sabbatical leave which was spent at the University of Michigan during which time he completed work for his Ph.D. degree. His investigations dealt with the Structure and Development of zoöspores of Phycomycetes.

H. E. Morris, botanist and bacteriologist of the Montana Experiment Station, is in charge of all the work relating to botany, the principal work being in plant pathology as regards the fruit industry and cereals. Among his publications are:

1. "Contribution to our Knowledge of Apple Scab"—Montana Exp. Bulletin 96.
2. "Effect of Arsenicals on Foliage." This is a study published in a series of three papers with Professor D. D. Swingle as coauthor.
3. Among other publications are some dealing with "Control of Stinkage Smut of Wheat", "Barberry Eradication", and "Plants Poisonous to Livestock in Montana".

Dr. P. A. Young, assistant botanist for the Montana Experiment station, is spending full time in plant pathology research. Some of his publications are: "Penetration Phenomena and Facultative Parasitism in *Altenaria diploidea*, and Other Fungi," Bot. Gaz. 81:258-279, 1926. "Facultative Parasitism and Host Ranges of Fungi," Amer. Journ. Bot. 13:502-520, 1926. Other papers appear in Phytopath. 16:70, 1926; 14:126, 1924; and Am. Journ. Bot. 14:481-486.

VIRGINIA MILLS.

PSI

University of Washington

Psi Chapter met at Friday Harbor, Washington, on August 3, for its second annual summer banquet. Members of other chapters who were attending the session at the Puget Sound Biological Station were guests of the Washington group. A representative of each organization reported on the activities of his chapter during the past year. Members present at the meeting were:

Iota Chapter

L. R. Boling
L. V. Beck
B. R. Monaghan
J. E. Stumberg

Xi Chapter

James A. Macnab

Phi Chapter

Dorothy Smith

Rho Chapter

Eleanore Hancher

Omega Chapter

Dr. A. O. Weese

Alpha Alpha

Richard Denman

Oklahoma A. and M.

(petitioning chapter)

Ruby Northrup

Beta Chapter

Dr. Melville H. Hatch

Mu Chapter

Dr. Robert C. Miller

Psi Chapter

Dr. Lena A. Hartge

Dr. E. C. Angst

Florence Folda

J. H. Hollingshead

Julius Hoverson

Keith O'Leary

Lyman Phiifer

Lloyd Southard

Wayne Wells

Marjorie Wells

Helena Werby

Albert Young

MARJORIE WELLS.

OMEGA

University of Oklahoma

The University of Oklahoma conferred the first Doctor of Philosophy degree in the history of the University in June, 1929, upon Miss Mary Jane Brown, a member of Iota Chapter of Phi Sigma. Doctor Brown spent the year preceding 1928-1929 teaching at the Oklahoma College for Women at Chickasha.

Master of Science degrees were received by Phyllis Draper, Rufus H. Moore and Aaron J. Sharp at the end of the spring semester and by Elizabeth Upshaw, Ernestine Finger and John Shed at the end of the summer term.

Four new members, Dr. Ralph D. Bird, Mrs. Ralph J. Andrews, Joe Edwards and Zelmer Logsdon, were taken in at the last initiation, held on April 20. Dr. A. I. Ortenburger, National Secretary, read the service.

Charles Olmsted (Xi) has recently affiliated with Omega Chapter.

The spring programs consisted of the following papers given by student members of the Chapter:

Miss Helen N. Vincent: "The Rate of Pollen Tube Elongation."

Mr. Ray Porter: "Inheritance of Columbian Plumage Patterns in Poultry."

Mr. N. M. Newport: "Spiders of the Wichita Mountains."

Miss Phyllis Draper: "Pollen Analyses in Post-glacial Ohio Bogs."

The Canti film, shown before an enthusiastic audience of several hundred people, was the feature of the last meeting of the semester. It was introduced and explained by Dr. Joseph M. Thuringer, professor of histology in the Oklahoma School of Medicine.

Cupid had good hunting in the ranks of Omega Chapter during the past six months. Herbert Warfel, teaching in West Virginia, started the epidemic in March by being married while there. He is at present teaching in Oklahoma City and retains his active membership under the new constitutional ruling. At the end of the summer term Aaron J. Sharp married Miss Evelyn Bunch. Mr. and Mrs. Sharp are now in Knoxville, where he holds an instructorship in botany in the University of Tennessee. Within a week Miss Elizabeth Upshaw became the bride of Owen Anderson. They are at the University of Minnesota where Mr. Anderson is working on his Doctor's degree. Shortly afterward was the marriage of Miss Lois Gould and Dr. Ralph Bird. News has lately been received that George Lane, graduate student in Botany, has acquired a wife (née Clarinda Murphy) in Iowa.

Some of the recent activities of Phi Sigma members include:

Miss Dixie Young spent the past year doing research work for a Doctor's degree at Yale.

Dr. and Mrs. A. Richards, accompanied by their sons, James and Ernest, were studying and traveling in Europe from March until September. Since returning, Doctor Richards has given several interesting talks on the European biological stations, museums, and universities.

Dr. Paul B. Sears spent the summer fighting a serious case of Para B Typhoid, acquired during a field trip in southern Oklahoma.

Dr. A. O. Weese was at the Puget Sound Biological Station at Friday Harbor, Washington.

Dr. A. S. Foster did research work on bud scales at the University of Leeds, England.

The summer activities of the Oklahoma Biological Survey were carried on by Dr. Ralph Bird, Ernest Raney and N. M. Newport. Special collections were made of fish, amphibians, insects, spiders and birds.

LOIS GOULD BIRD.

ALPHA ALPHA

University of Southern California

Alpha Alpha Chapter of Phi Sigma Society at the University of Southern California is anticipating a very active and inspirational year. Research is being stimulated and fostered for all members by the brilliant speakers we have been fortunate in obtaining and by the able help of our faculty advisors.

The spring meeting of Alpha Alpha Chapter was held at the Mona Lisa Cafe. The meeting was in the form of a banquet for the new members who received their membership certificates at that time. The following were elected to membership:

Miss Fredericka Detmers, Ph.D.
Curator of Herbarium, U. S. C.

Miss Mary Louise Fossler, M.A.
Assistant Professor of Biology,
U. S. C.

Mr. Harry L. Bauer, M.S.
Instructor, Long Beach Junior
College

Mr. Roy Elliott Campbell, M.S.
Entomologist, U. S. Dept. of
Agriculture, L.A.

Mrs. Katherine E. Johnston, M.A.,
(née Crosby) Student, U. S. C.
(1928-29)

Mr. Robert Scofield Denman, M.A.
Instructor, Long Beach Junior
College

Miss Nettie Ellen Denning, M.A.
Instructor, Pasadena Junior College

Mr. William Hoffman Farrand, M.S.
Geologist, Los Angeles

Miss Lucile Anness Grizzle, M.A.
Instructor, Compton Junior College

Miss Elinor Randolph Ives, B.A.
Student Medical School, U. S. C.
Bacteriologist

Miss Violet E. Huiton
Vice-principal, Norwalk Grammar
School

Miss Winifred Estelle King, B.A. Instructor, High School Science	Mr. Robert L. Rutherford, B.A. Assistant Instructor of Zoology, U. S. C.
Mr. Karl Korthener, M.A. Student, Loma Linda Medical School	Mr. Karleton Forbes Scott, B.A. Instructor, Compton Junior College
Mrs. Nina Lee Loomis, B.A. Instructor, High School Science	Mrs. Adah I. Stewart, B.S. Instructor, Central Junior High School, L. A.
Mr. Lester Allen McNichols, B.A. Instructor, El Monte High School	Mr. Arthur Myrtelus Swanson, D.D.S. Student, U. S. C.
Miss Dorothy A. Moyer, M.S. Geologist, Los Angeles	Mr. Walter Word, B.A. Instructor, High School
Mr. Frank Wilson Newton, B.A. Instructor, Los Angeles City School	Miss Minnie Yonge, B.A. Instructor, Long Beach Polytechnic High School
Miss Helen Louise Phillips, B.A. Student, U. S. C.	
Miss Beryl Rapp, B.A. Instructor, Los Angeles City School	

Dr. Paul Popenoe, eugenist, and author of a number of publications, was the speaker of the evening. He gave a very interesting discussion on the status of eugenics in California with special reference to progress in the care of inmates of certain institutions.

This year Alpha Alpha Chapter is under the able direction of the following officers:

Mr. J. L. Arnold, President
Miss Van Vleet, Vice-President
Miss Nettie Denning, Secretary
Miss Moyer, Corresponding Secretary
Mr. William Farrand, Treasurer

The first meeting of this semester was held October 4 in the Science Hall. Dinner was served to all members and friends, and a round table discussion was led by Dr. Hazel Field of Occidental College and Dr. B. M. Allen of the University of California. We were particularly fortunate in obtaining Dr. John Kessel of the Department of Pathology and Bacteriology at the University of Southern California as our speaker. He is a member of the Phi Sigma Chapter at the University of California where he acted as its first president. Doctor Kessel spoke on the recent biological and medical advances in China. He gave a resumé of the sanitary conditions in Peking and told of his research work on pathological *Amoeba*. Doctor Kessel was connected with the Medical College in Peking for several years.

The executive committee has planned many other worth while and stimulating programs for the ensuing year.

LUCILE A. GRIZZLE.

ALPHA EPSILON

University of Pittsburgh

At the first meeting of the Pittsburgh chapter for this school year, Miss Minerva Torvik, our first "scholar," reported on the work accomplished at Woods Hole in her problem on the genetics of the parasitic wasp (*Habrobracon*). In addition to the funds expended this summer, our treasurer holds a "nest-egg" of twenty dollars, which, according to the terms of the gift, is to be expended at the rate of five dollars in each of the next four years to start the subscription list for our annual Woods Hole scholarship.

For the benefit of those who have thought that "there ain't no such animal" we may remark that the "Cathedral of Learning," Pittsburgh's skyscraper university building, is now "up". The steel framework has been completed; the concrete floors have been laid; and work on the limestone sheathing is under way. Set in a fourteen acre plot in the civic center of Pittsburgh, it dominates a large part of the city, and can be seen for miles. The building may be described as aspiring, rather than towering; when it is finished it will be renowned not for its size, but for its beauty.

We have scheduled two joint meetings for this year with the "Colymbola Club", undergraduate natural history organization of the University of Pittsburgh. For the first of these we will be entertained by Prof. McClintock, Photo-naturalist. We wonder how many universities are fortunate enough to have a professor whose "job" is to make motion pictures of plant and animal life. At the second joint meeting Phi Sigma will present a program demonstrating our current researches.

Members of Phi Sigma seem to gravitate to Pittsburgh. At present we have Dr. O. E. Jennings, Honorary member (Washington and Jefferson); Dr. P. W. Whiting, Dr. A. R. Whiting, Miss Lorna Thigpen (Maine); Dr. Ira Hogg, Dr. S. T. Brooks, Ben Kettlekamp and Ruth Shaw (Kansas).

J. L. CARTLEDGE.

REPORT OF THE NATIONAL TREASURER

January 1, 1929 to July 1, 1929

GENERAL FUND

Receipts	\$1,078.42
Expenditures	359.89
Balance on hand	718.53

CONVENTION FUND

Receipts	\$ 787.00
Expenditures	66.00
Balance on hand	721.00

BIOLOGIST FUND

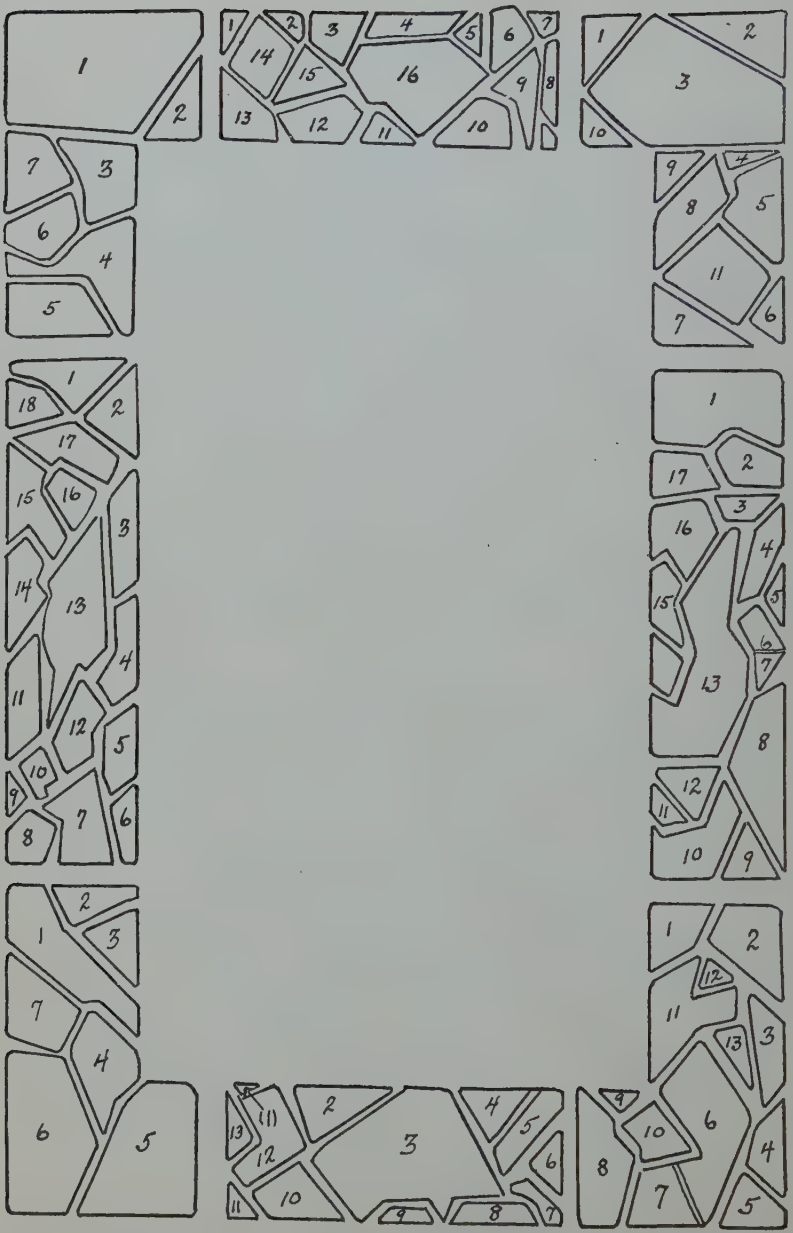
Receipts	\$ 582.41
Expenditures	364.76
Balance on hand	217.65

ENDOWMENT FUND

Receipts	\$ 790.38
Expenditures	546.17
Balance on hand	244.21

LIFE SUBSCRIPTION FUND

Receipts	\$ 19.00
----------------	----------



KEY TO THE COVER DESIGN

I. UPPER CENTER BLOCK.

1. Snail
2. Earliest known fossil foot print
(*Thinopus antiquus*)
3. Turtle
4. *Amphioxus*
5. Water chestnut
6. Jack-in-the-pulpit
7. Flower sperm
8. Beetle
9. Moss
10. Snake
11. Ammonid (fossil)
12. Dragon fly
13. *Octopus* (Cephalopod)
14. *Marchantia*
15. *Molgula*
16. Little Brown Bat (*Myotis lucifugus*)

II. UPPER RIGHT CORNER BLOCK.

1. Pollen grains
2. *Cyclops*
3. *Stegosaurus unguata*
4. Cholera bacteria
5. *Metridium*
6. Bean seed (dicot)
7. Ganglion cell
8. Spikelet of wheat
9. Rotifer
10. Acorn
11. Old chimpanzee

III. RIGHT CENTER BLOCK.

1. Cynodont skull
2. *Limulus*
3. Leech
4. Diatom
5. Sponge Spicule
6. Frog (*Acris gryllus*)
7. Snail (*Goniobasis*)
8. *Nereocystis* (seaweed)
9. *Grantia*
10. *Balanoglossus*
11. Cabbage
12. *Amanita* (mushroom)
13. *Clidastes*, (Mososaur)

14. Spore of *Equisitum* with elaters
15. *Pleurotomaria* (marine gastropod)
16. Cup fungus, order *Pezizales*
17. Ginko leaf

IV. LOWER RIGHT BLOCK.

1. *Gonionemus*
2. Deep sea fish (*Linophryne lucifer*)
3. Portuguese-Man-of-War
(*Physalia*)
4. *Hydra*
5. Bacteria
6. *Chamaeleon*
7. Duck weed
8. Diatom
9. Bird nest
10. *Volvox*
11. Fern
12. Tree hopper
13. *Euglena*

V. LOWER CENTER BLOCK.

1. Pollen grains
2. Crab
3. *Dimetrodon* (Pelycosaur)
4. Spider
5. *Spirogyra*
6. Fruit of maple tree
7. Nemertean
8. *Planaria*
9. *Paramecium*
10. Starfish
11. Sponge spicule
12. *Equisitum*
13. Mushroom

VI. LOWER LEFT BLOCK

1. Salamander
2. *Rafflesia padama*
3. *Drosophila melanogaster*
4. Fermentation tube
5. Fibro-vascular bundle of corn
6. Great Auk
7. Longitudinal section of plant ovary to show fertilization.

VII. CENTER LEFT BLOCK.

1. Germination of bean seed
2. Floral diagram
3. Powdery mildew
4. Sea-horse (*Hippocampus*)
5. Squid
6. Brittle Star
7. Fish (*Zanclus*)
8. *Amoeba*
9. Beetle
10. *Cercaria*
11. Lady's Slipper (*Cypripedium*)
12. Flower
13. *Dimorphodon* (Pterodactyl)

14. Hammer head shark

15. Mildew
16. *Physa* (snail)
17. Venus's Girdle
18. Cleaving egg

VIII. UPPER LEFT BLOCK.

1. Dinosaur (*Triceratops prorsus*)
2. Starch grain
3. Chick embryo
4. *Cladoselache* (Devonian Shark)
5. *Ornithorhynchus paradoxus*
(Duckbill)
6. *Echinocactus*
7. Metaphase



Keys

STANDARD SIZE (*Official*)

Swivel ring top	\$5.50
Stationary ring top	5.00
Mounted as a pin	6.25

MINIATURE SIZE (*Small*)

Swivel ring top	\$5.00
Stationary ring top	4.50
Mounted as a pin	5.50



Copies of the *Constitution* are to be ordered from the National Secretary (A. I. Ortenburger, Norman, Okla.) at a charge of five cents a copy.

Membership Record Blanks are to be ordered from the National Secretary at a charge of two cents each.

Membership Certificates are issued by the National Secretary when the record blanks have been filled out, received, and their contents approved at no charge.

When sending initiation fees to the National Treasurer always send the serial number of the person for whom the fee is paid.

Order all keys direct from the L. G. Balfour Co., of Attleboro, Mass., through either the chapter Secretary or Treasurer. Accompany all orders with the name (plainly printed) of the person for whom the key is intended, the chapter to which he belongs and the date of his initiation.

Editor The BIOLOGIST:

I suggest

I wish to subscribe to The BIOLOGIST:

1 year	3 years	5 years	10 years	Life
\$1.00	\$2.50	\$4.00	\$7.00	\$10.00

This is your magazine. We want you to help edit it. Give us the benefit of your constructive criticism. Subscribe today.

NAME..... Chapter.....

Address.....

City.....State.....

Mail check (payable to E. H. Stewart, Nat. Treas.)

Amount \$ to

A. I. ORTENBURGER,
Editor, The BIOLOGIST,
Department of Zoology, University of Oklahoma,
NORMAN, OKLA.

THANK YOU!



THE ROAD TO LEADERSHIP

In every field of human endeavor, he that is first must perpetually live in "the fierce light which beats upon the throne." Be this leadership vested in a man or a product, emulation and envy are ever at work. The reward of leadership is widespread recognition and the penalty now as ever, is denial and detraction. The leader is assailed because he is a leader and so confirms the superiority he seeks to deny. But it avails nothing, for if the leader deserves, he remains leader; for only that which deserves to live, lives.

NINE OUT OF TEN FRATERNITY BADGES
ON ANY COLLEGE CAMPUS ARE BALFOUR-MADE

L. G. BALFOUR COMPANY
ATTLEBORO MASSACHUSETTS

